Life Sciences Division

E-Newsletter May 11, 2007

Highlights

Lab-on-a-Chip Device Speeds Proteomics

The era of genomics — the study of genes and their functions — is now making way for the era of proteomics: the study of proteins that genes encode. Future proteomics research should see a substantial acceleration with the development of a new device that provides the first monolithic interface between mass spectrometry and silicon/silica-based microfluidic "lab-on-a-chip" technologies. This new device, called a multinozzle nanoelectrospray emitter array, was developed by a team led by **Daojing Wang**, of the Lab's Life Sciences Division, and Peidong Yang, of the Materials Sciences Division. Full story: http://www.lbl.gov/Science-Articles/Archive/MSD-lab-chip.html

Today at Berkeley Lab, 5/3/07

Vigorous Exercise Keeps People Thin with Age

The old adage "use it or lose it" is now truer than ever. People who maintain a vigorously active lifestyle as they age gain less weight than people who exercise at more moderate levels, according to a first-of-its-kind study that tracked a large group of runners who kept the same exercise regimen as they grew older. The study, led by Berkeley Lab life scientist **Paul Williams**, also found that maintaining exercise with age is particularly effective in preventing extreme weight gain, which is associated with high blood pressure, high cholesterol, diabetes, and other diseases. Full story: http://www.lbl.gov/Science-Articles/Archive/LSD-vigorous-exercise.html

Today at Berkeley Lab, 5/4/07

Melvin L. Samuels Lectureship

On April 27, **Joe Gray** presented the 13th (annual) Melvin Samuels Lecture at MD Anderson Cancer Center on a systems approach to marker guided therapy. Joe Gray was recognized for his involvement in analysis of the genetic progression of human breast and ovarian cancers. The lectureship was sponsored by the Department of Genitourinary Medical Oncology and hosted by Randal E. Millikan, M.D., Ph.D.

Re-appointment Sirna-Merck Scientific Advisory Board

Joe Gray has been re-appointed to the Sirna-Merck Scientific Advisory Board. Merck & Co., Inc., one of the world's leading research-based pharmaceutical companies, and Sirna Therapeutics, Inc., a publicly held biotechnology company and a leader in developing a new class of medicines based on RNA

interference (RNAi) technology, entered into a definitive agreement in November 2006 under which Merck acquired Sirna.

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modENCODE Progam

A consortium of 8 Principal Investigators that includes **Abby Dernburg** was recently awarded a new grant from the NHGRI under the "modENCODE" program (Model Organism Encyclopedia of DNA Elements), "Identification of DNA elements governing chromatin function in C. elegans." This grant will span 4 years and will provide major insights into the genome-wide organization of chromatin and chromosomes in the nematode C. elegans. Other groups in the Life Sciences Division, headed by **Sue Celniker** and **Gary Karpen**, also received grants under this program to study functional DNA elements in the fruitfly, Drosophila melanogaster. Program info: http://www.genome.gov/ENCODE/

An interview with members of the **Berkeley Drosophila Transcription Network Project** (a multidisciplinary group focused on analyzing and visualizing gene expression during development) about its fascinating effort to use graphics as an interactive tool to visually explore information was featured in: Expressing Genes, Felice Frankel. American Scientist 95:68-71, 2007, http://www.americanscientist.org/template/AssetDetail/assetid/54432
Project details: http://bdtnp.lbl.gov/Fly-Net/

As part of the **Berkeley Drosophila Transcription Network Project**, **Cris Luengo Hendrik and colleagues** developed a method that allows simultaneous quantitative visualization of gene expression and cellular-level morphological analysis in whole embryos; A new high-throughput approach bringing us closer to a fuller understanding of how transcription-factor networks control fruitfly development in the context of embryonic morphology. Read more: Developmental networks in time and space, Louisa Flintoft. Nature Reviews Genetics 8:88-89, Research Highlights, 2007, http://www.nature.com/nrg/journal/v8/n2/full/nrg2055.html

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Dernburg awarded tenure

Following a review, **Abby Dernburg**, Sr. Scientist in the Life Sciences Division, was promoted from Assistant Professor in Residence to Associate Professor in the Department of Molecular and Cell Biology at the University of California, Berkeley. Her tenure will be effective per July 1.

Abby Dernburg has been selected to receive the **American Society for Cell Biology (ASCB) Life Scientist Early Career Award 2007**. She is invited to present her research and accept the award at the ASCB Annual Meeting in Washington DC in December.

The **Phi Beta Kappa Society**, the nation's oldest academic honor society with more than 500,000 members and 276 chapters, selected **Terumi Kohwi-Shigematsu** as one of the five founding members of the society's newest chapter at Washington College. The society, founded in 1776, celebrates and advocates excellence in the liberal arts and sciences. Kohwi-Shigematsu officially accepted the

membership in a ceremony on February 23.
http://news.washcoll.edu/press_releases/2006/10/31_phibetakappa.php

Recent publications (selected)

Luengo Hendriks C.L. & Knowles D.W.. Comments on the paper 'A novel 3D wavelet-based filter for visualizing features in noisy biological data', by Moss et al. J. Microscopy, 225 (1): 104–107, 2007.

Gurushankar Chandramouly, Patricia C. Abad, David W. Knowles, and Sophie A. Lelièvre. Nuclear organization and tissue polarity cooperate to control cell fate in mammary acini. J. Cell Sci. doi:10.1242/jcs.03439, 2007.

Patricia C. Abad, Jason Lewis, I. Saira Mian, David W. Knowles, Jennifer Sturgis, Sunil Badve, Jun Xie, Sophie A. Lelièvre. NuMA Influences Higher Order Chromatin Organization in Human Mammary Epithelium. Mol. Biol. Cell, 18:348-361, 2007.

David W. Knowles, Damir Sudar, Carol Bator-Kelly, Mina J. Bissell, and Sophie A. Lelièvre. Automated local bright feature image analysis of nuclear protein distribution identifies changes in tissue phenotype. Proc. Natl. Acad. Sci. USA 103, 4445-4450, 2007.

Kenny PA and Bissell MJ (2007). Targeting TACE-Dependent EGFR-ligand Shedding in Breast Cancer. Journal of Clinical Investigation. Clin. Invest., Jan 2007; doi:10.1172/JCI29518.

Villadsen R, Fridriksdottir AJ, Rønnov-Jessen L, Gudjonsson T, Rank F, Labarge MA, Bissell MJ, Petersen OW (2007). Evidence for a Stem Cell Hierarchy in the Adult Human Breast. The Journal of Cell Biology. The Journal of Cell Biology. 2007, Apr 9;177(1):87-101